OSU Working Papers in Linguistics 49, 71-89

Remarks on Simple Subjunctives*

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0 Introduction

One of the prevalent themes in the semantic literature of the last 15 years has been the idea that many natural language semantic phenomena involve what have come to be known as "tripartite structures". While this was probably most apparent in the domain of adverbial (cf. Lewis 1975) or nominal quantification (cf. Barwise and Cooper 1981), the idea of partitioning the semantic parts of a sentence into operator, restrictor, and nuclear scope (cf. Partee 1991 for a survey) has also been used in a number of other semantic domains, including modals and conditional sentences. On this view, first conceptualized in Kratzer 1978, a conditional sentence can be seen as a special kind of modal sentence where the *if*-clause contributes the domain restriction for a quantification over possible worlds. The quantificational operator relating the restricted domain and the assertion is either given by a modal in the main clause, or implicitly assumed to be that of a universal if no modal is present. This general approach can cover both indicative conditionals as well as counterfactual—or as we will call them in this study, subjunctive—conditionals, in which the main clause predicate is in the form of *would* + infinitive in English or a subjunctive form in German, and the *if*-clause in an analogous nonindicative form. Often, it is assumed, cf. Heim 1992:218, that (part of) the choice of indicative vs. subjunctive conditionals is governed by conditions of *use*, rather than truth conditions per se.

However, while quite a considerable amount of effort has been spent on characterizing the semantics of subjunctive conditional sentences with overt antecedents (*if*-clauses), relatively little attention has been paid to the particular kinds of problems raised by those instances where we find a clause in subjunctive mood without an overt antecedent present. Given the tripartite perspective, this raises the issue of what fills the role of restrictor and by what mechanism it gets there. The corresponding questions regarding nonovert (modal) operators hardly seem to present much of a problem, as the default assumption of a necessity operator straightforwardly presents an answer.[1] Because of this, it may have been thought that the problem of recovering the content of

* I would like to thank my implicit coauthor Craige Roberts for many discussions and untiring encouragement. Her efforts deserve a paper with fewer shortcomings. This work was supported at various stages by NSF Grant No. NBS-9022934.

[1] Cf. Portner 1993:34: "The default conversational force is necessity."

nonovert restrictors is equally simple, but as was shown in a number of studies by Walter Kasper (1987, 1992), this is not so. We will take his observations as a starting point for our own investigation into the problem.

1 Kasper's account of Simple Subjunctives

Kasper 1992, which is based in large part on Kasper 1987, points out that while often, the antecedent of a subjunctive conditional can be recovered from context, as in (1) (Kasper 1992:308), there are also uses of simple subjunctives where the antecedent does not seem to be recovered from the context, but rather from the content of the subjunctive clause itself.

(1) Q: What would John do **if his wife left him?**
A: He would marry his girlfriend.

Thus, in the following example, Kasper claims that the antecedent of the conditional is recoverable from the "preconditions" of the predicate in the main clause, *fail the exam*, resulting in a reconstructed content along the lines given in (2b): (cf. Kasper:309)

(2) a. Your brother Peter wouldn't have failed the exam.
b. **If your brother Peter had taken the exam (in your place),**
[he] wouldn't have failed [it].

This meaning arises for instance in a context where Peter's mother utters her disappointment toward her son John, who recently failed said exam. What this sentence conveys is the belief that Peter taking the exam in the place of John would have been more successful. As Kasper points out, in such a situation, it is not possible to reconstruct the utterance in (2a) as meaning something like:

(3) **If your brother Peter had had enough sleep,**
[he] wouldn't have failed the exam.

One important difference between the sentences in (2b) and (3) is that in (3), there seems to be a presupposition that Peter in fact failed the exam, whereas if anything, the opposite is the case for (2b). Moreover, this appears to contradict the commonly held assumption that the use of the subjunctive presupposes falsehood of the indicative counterpart for both antecedent and consequent. Thus, while in (3), there does seem to be an understanding that Peter indeed did not have enough sleep and that he did fail the exam, it is not clear in what way the indicative counterparts of (2a) or of the consequent of (2b) could be considered false. Instead, it appears that nonparticipation in an exam renders a claim of nonfailure "trivially true."

This situation reverses itself if we look at the counterparts of (2) and (3) that contain the nonnegated versions of the respective consequents:[2]

(4) a. Your brother Peter would have failed the exam.
b. **If your brother Peter had taken the exam (in your place),**
[he] would have failed [it].

(5) **If your brother Peter had had less sleep,**
[he] would have failed the exam.

[2] To enhance plausibility, the antecedent in (5) has been changed slightly too.

Here, it appears that the subjunctive indeed carries the presuppositions that one would usually expect. Thus, Kasper suggests that in (5), as before, the falsehood of the indicative counterpart is presupposed, i.e. that Peter did not fail the exam. But notice that the same inference is now also possible for (4), viz. that Peter did not fail the exam.

Kasper's conclusions from the facts in (2-4) are twofold:

1. Subjunctives can be licensed not only by outright falsity of the indicative counterpart, but also by means of "preconditions" on the indicative counterpart which are not met.
2. While nonnegated simple indicatives carry such preconditions, this is not the case for negated simple indicatives.

Thus, according to Kasper, if Peter never took the exam, a negated sentence like the following can nevertheless be felicitously and truthfully uttered:

(6) Peter did not fail the exam.

As a consequence of the statements in 1. and 2. above, the asymmetric inference patterns for (2) and (4) fall out: (cf. Kasper:312)

> *The corresponding simple subjunctive then presupposes the falsity of the simple indicative just because the simple subjunctive presupposes the falsity of those necessary preconditions. In the case of negated simple subjunctives, on the other hand, the fact that the preconditions are not satisfied is compatible with the truth of the corresponding simple indicative.*

One important issue we need to turn to next is the nature of the preconditions which Kasper assumes to be responsible for licensing subjunctives in those cases where they are not satisfied. He does acknowledge that there appears to be a striking similarity between this notion of precondition and that of "presupposition". Thus, for instance, in the example in (7a), the definite description gives rise to an existence presupposition, and it is precisely the nonfulfillment of this presupposition that can license (one reading of) the sentence in (7b), given in (7c): (cf. Kasper:314)

(7) a. The king of France is (not) bald.
b. The king of France would (not) be bald.
c. **If there were a king of France,** [he] would (not) be bald.

However, Kasper stops short of equating his notion of precondition with that of presupposition. It is not exactly clear that he has any convincing argument for doing so. Rather, it seems that Kasper wants to maintain the distinction mostly on conceptual grounds. Thus, he assumes presuppositions to be associated with the *linguistic* expression of an utterance, rather than its propositional meaning, which means, for instance that participating in an exam is viewed as a ***precondition*** for failing it, but not as a *presupposition* as it is not particularly tied to the linguistic expression *fail an exam*.

At this point, we may wonder whether this division is really grounded in empirical fact or rather has to do with an antiquated conception of presupposition as something that is intimately linked with a linguistic form.[3] For instance, it has been known since at least Karttunen 1973 that conditional sentences act as filters for the purposes of presupposition projection. That is, whether a presupposition of the consequent is projected to the whole sentence depends on the antecedent and its entailments. For example in (8), the

[3] Note, for instance, that any mention of treatments of presuppositions in terms of context change and the resulting theory of presupposition projection, as in Heim (1982, 1983, 1992) is conspicuously absent from the references.

consequent contains a possessive pronoun which will give rise to the presupposition that there are indeed instances of the common noun (i.e. children) that "belong to" the possessor. Since under normal circumstances, being married bears no necessary impact on someone's parental status, the presupposition that Keith has children is projected to the whole sentence (cf. Chierchia and McConnell-Ginet 1990).

(8) If Keith is married to Linda, all of his children are asleep.

The situation is rather different, however, if the antecedent entails any of the presuppositions of the consequent. It has been said that in this case, the presuppositions are "filtered out". A more adequate way of looking at it may be that the antecedent provides a local (as opposed to global) context which already satisfies the presuppositions of the consequent. This can be seen in (9), where the whole sentence no longer carries a presupposition that Keith is the father to any children.

(9) If Keith has children, all of his children are asleep.

What is important is that Kasper's preconditions seem to behave in exactly the same way for the purposes of "precondition" projection. Thus, in (10), where the antecedent has no bearing on the preconditions of the consequent, the inference that Peter indeed participated in the exam survives:

(10) If Peter didn't study much, he (probably) failed the exam.

In contrast, if the antecedent (or its entailments) locally satisfies the preconditions, the sentence as a whole no longer allows the inference that Peter actually participated in the exam:

(11) If Peter took the exam, he (probably) failed it.

If the notion of presupposition as a kind of additional constraint on meaning tied to linguistic form, and Kasper's preconditions indeed were distinct (albeit partially overlapping) phenomena, this convergence would be coincidental. For all we know, the projection behavior of these preconditions could be rather different from that of "first-class" presuppositions. On the other hand, a rather different picture emerges if one views presuppositions in terms of the requirements they impose on *context*. On such a view, advanced by Stalnaker and first explicitly articulated formally in Heim 1983, a presupposition of a sentence is an entailment that is shared among all contexts admitting that sentence. What triggers such requirements on context is pretty much of secondary interest. While it often seems to originate with linguistic form, as, say, for definite descriptions, one can think of Kasper's preconditions in terms of requirements that are imposed on context by virtue of how the world is viewed to work; i.e. that failing an exam necessitates taking it etc. What is important for the purposes of explaining the licensing of subjunctives, then, are the requirements on context, or more precisely, that some among them not be fulfilled,[4] regardless of whether these requirements are "presuppositional" in Kasper's narrow use of the term. In our own usage of the term presupposition, we will from now on think of it in terms of entailments of contexts admitting a given sentence, following Heim 1983, 1992. Along with the terminology, we also adopt the view that strictly speaking, there is no such thing as "presupposition cancellation." Instead, it can be reasonably argued that cases such as (6) that give the *appearance* of presupposition cancellation should be reanalyzed in terms of a different role played by the negation here. Specifically, once one considers contexts in which such sentences can be felicitously uttered, it becomes clear that they normally exhibit an

[4] Or, given the epistemic state of the speaker, that it is deemed *unlikely* that the state of affairs in question holds, cf. Portner 1993:28.

element of corrective response which is typical of "metalinguistic" negation, cf. Horn 1985:

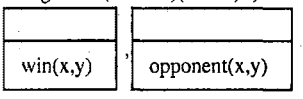
(6') Q: Did Peter fail the exam?
A: Peter did not fail the exam. In fact, he never took it!

As Horn has shown, the function of metalinguistic negation is to deny the appropriateness of a particular utterance based on such diverse aspects as presuppositions or even pronunciation. Hence, in (6'), the answer can similarly be understood as calling into question whether the predicate *fail the exam* can even felicitously be applied in Peter's case as opposed to truthconditionally negating the proposition 'Peter failed the exam'. If the latter were the case, it would be a mystery why the sentence in A is in fact compatible with the truth of 'Peter did not pass the exam'.

The absence of an explicit recognition of the role of context for the notion of presupposition and the projection problem carries over to the particular proposals Kasper makes to account for simple subjunctives formally in a Discourse Representation Theory (DRT) framework (cf. Kamp 1981) based on a Lexical Functional Grammar (LFG) syntactic backbone. This is somewhat ironic, as DRT was initially developed as a dynamic theory, that is, as one that was supposed to extend the limits of the purely sentence-based view of classical Montague Semantics and take into account the influence of discourse for instance on possible anaphoric relations. Yet, at least as far as Kasper's usage of DRT goes, one finds little evidence that his dynamic perspective is thought to encompass contextual influence beyond pronominal reference—contrary to the spirit of Heim's Context Change Semantics, which is often referred to as a "twin" of DRT.

In particular, Kasper proposes to bring presuppositional effects into DRT by letting the semantic representation of a linguistic expression correspond to a pair of discourse representation structures (DRSs). The first, *textual*, DRS represents the truthconditional content, and the second, *background*, DRS encodes conditions which may affect the interpretation of the first DRS. For the most part, what a linguistic expression contributes in terms of textual and background DRSs will be pretty much alike. However, for instance in the case of a verb such as *win-against*, the background DRS will contain a condition to the effect that in order to win against someone, one has to be the latter's opponent (Kasper:325):[5]

(12) v(win-against<(↑SUBJ)(↑OBJ)>) =

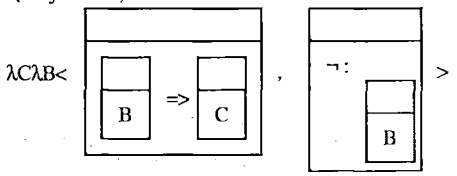


Crucially now, the bipartite DRS Kasper proposes for the subjunctive operator is sensitive to the distinction between textual and background DRSs. Thus in (13), the λ-expressions[6] specify that the first part of a DRS that this operator combines with, that is the variable over conditions, *C*, fill the slot of the textual DRS in the resulting represention, while the second argument, *B*, picks up the information in the background DRS and inserts it in all occurrences of this variable (Kasper:325).

[5] While Kasper is not explicit on this point, one has to assume that some general principle ensures that the semantic roles of the predicates *win* and *opponent* are linked to the appropriate grammatical functions, SUBJ and OBJ.

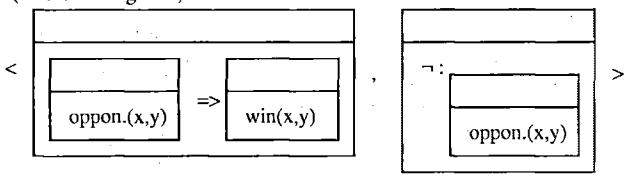
[6] The treatment of DRSs as functional objects, i.e. as functions from (pairs of) DRSs to (pairs of) DRSs allows semantic construction to be reduced to functional application.

(13) v(subjunctive) =



As a result, the nonnegated conditions serve as the antecedent for the conditional constraint that represents the textual part of the new DRS. At the same time, the resulting DRS will now have the negated background conditions of its argument as its own background conditions. Once the textual DRS has been built up for a sentence, the background DRS is then added to it by a process of *compatibility restricted incrementation* (cf. Gazdar's 1979:131 notion of *satisfiable incrementation*). This means that given a textual DRS K and a background DRS BG, only those conditions of BG are added to the resulting textual representation that are compatible with the other conditions of BG as well as all those of K. In the case of subjunctives, this amounts by default to adding the entire negated DRS in the background BG in (13). As a consequence, all previous and following conditions must be compatible with these conditions, which has the effect of rendering the antecedent of the conditional counterfactual.[7] The result of combining the lexical constribution of *win-against* with that of the subjunctive, yielding *would win-against*, is given in (14), which could be paraphased as something like "x would win against y iff x wins against y provided x and y are opponents of each other, and it is part of the background information that x and y are not opponents of each other."

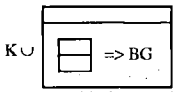
(14) v(would win-against) =



On closer inspection, there are a number of aspects of Kasper's approach that are questionable. Consider the particular kinds of backgrounds comprising the preconditions whose failure gives rise to a licensing of subjunctives. The one example given, namely that the verb *win-against* has a precondition to the effect that those involved in a winning event be opponents of each other, is fairly illustrative of what is wrong with this kind of approach. Imagine a situation in which Peter is matched against Boris Becker ("BB") in a tennis tournament, but for some reason, the two never get to play against each other (for

[7] As Kasper himself notes (p. 330) as far as the treatment of simple subjunctives is concerned, it appears that instead of his compatibility restricted incrementation, simple union of the textual DRS K and the background DRS BG, the latter given as the consequent of a conditional with empty antecedent, would suffice, given in (i):

(i)



The reason for this is that there will never be a conflict among conditions as the textual part of a subjunctive sentence is given as a complex, conditional DRS, which means that none of the conditions are asserted, only the *conditional relationship* between the two DRSs notated as "=>".

instance, because Peter broke his wrist when he fell off the curb at his hotel). It seems plausible to regard Peter and BB indeed as opponents of each other. Kasper's theory would predict that the following sentence should not be an acceptable simple subjunctive as the preconditions *are* met by context. However, this example seems perfectly fine if it is understood that some other participant played a full match against BB and lost.

(15) Peter would have won against Boris Becker.

From this, we may conclude that the preconditions for winning have to be incremented by a condition encoding the requirement that the people involved actually *played* against each other. But that won't help much either, for suppose that Peter and BB actually get to meet on the tennis court, but the match is never finished because of an injury afflicting Peter half-way during the match. In this situation again, a sentence like (15) would be predicted to be impossible, even in a scenario as stated above where others actually played and lost against BB.

The point made by these examples is that there is no principled way to anticipate all the preconditions of an action that may become relevant for constructing ways in which the event in question is prevented from taking place in reality. The problem is reminiscient of the approach to word meaning in terms of lexical decomposition into necessary and sufficient conditions. All such efforts are notoriously fraught with the problem that often there is an inherent vagueness in the interpretation of such conditions and that because of the great deal of situational dependency of what are perceived to be defining features, the whole enterprise is open-ended in principle.[8] At the same time, it is quite clear from Kasper's description that he considers such background information part of what is specified as the lexical information associated with verbs such as *win*.

Another argument against Kasper's explicit encoding of failed preconditions in DRSs comes from cross-linguistic considerations. Let us suppose that eligible preconditions for licensing subjunctives cannot directly be deduced from the meaning of a given verb, but have to be made explicit as the background part of the lexically contributed DRS for a given verb. Then it should, at least in principle, be possible for two languages to converge on the semantic contribution of the subjunctive as well as the textual meaning of a given verb, but disagree on whether or not a certain situation licenses the use of the subjunctive. The reason for this is that there is no guarantee that each language will also encode identical preconditions for the verb in questions. And of course, with different preconditions, the resulting DRSs will be different as well, specifying different satisfaction conditions. While this is somewhat hard to test empirically (because it isn't always immediately obvious that the first variable in this equation, i.e. the meaning contribution of the subjunctive, is really identical), it seems to be an implausible scenario, and certainly is not supported by the situation with regard to English and German. For instance, the equivalent of (2a), given as (16) below, is virtually synonymous with the English sentence.

(16) Dein Bruder Peter wäre in der Prüfung nicht durchgefallen.
your brother Peter would.have in the exam not failed

This would be a coincidental fact in Kasper's theory, but would necessarily fall out in any account in which the ingredients for the semantics consists of no more than the lexical meaning of the words involved, the felicity conditions imposed on context by subjunctives, and very general, cross-linguistically valid considerations of how domain restriction works in these cases.

[8] This is also reminiscent of what Kratzer 1989 has to say about one attempt at stating the truth conditions of counterfactuals: "Pilosophers like Nelos Goodman [...] actually took it upon themselves to try to say exactly what the facts are which have to be taken into account in the evaluation of a counterfactual sentence. [...] Goodman eventually reached the conclusion that the additional premises [needed to make the consequent follow logically, AK] don't seem to be specifiable in a non-circular way."

2 The role of intonation and informational structure

Another of the more severe shortcomings of the analysis offered by Kasper is the fact that he does not establish a connection between the special intonational/information-structural properties of the kind of sentences he considers and their meaning. Thus, Kasper notes (p. 313) that sentences containing simple subjunctives are "often used with contrastive stress." What is probably meant by this is that in the sentence in (17a), the subject Peter carries the intonational properties of a contrastive topic, which the paraphrase in (17b) tries to elucidate.

(17) a. *Peter* would have passed that exam.
L*H L (H%) H*L
b. As for Peter (as opposed to someone else who didn't pass the exam), he would have passed the exam

As is noted by Partee 1991:178, the function of contrastive topics is to "present one topic among alternative possible topics". Intonationally, such topics are often realized in terms of what Jackendoff 1972, following Bolinger 1965, refers to as a "B accent", that is, a rising nuclear tone L*H consisting of a low tone (L*) associated with the stressed syllable and a trailing high tone (H) to the following one (cf. Féry 1992:21). Since B accents usually constitute their own intermediate phrases, one also finds a low phrase accent (L) at the end.[9] Moreover, it seems that especially in slower speech, B-accented constituents can form an Intonation phrase (IP) of their own, in which case there is a high boundary tone (H%). If we compare the example in (17) with the version in which *Peter* does not bear a B accent, a noticeable difference in interpretation emerges:

(18) Peter would have passed that exam.
H*L

Unless the context has already established that someone other than Peter failed that exam and the attention is now shifted to how Peter would have fared in comparison (for instance by means of a question like "How about Peter?"), it is essentially impossible to get a contrastive interpretation here. Instead, we assume that Peter did not pass his own exam in actuality and that under some contextually salient circumstance (such as his having had more sleep the night before, cf. (3) above), his fate would have been otherwise.

As the counterpart of the B accent, we have what Jackendoff calls the "A accent", whose intonational implementation is in terms of a falling H*L contour. If a sentence contains a B accent, there will also have to be an A accent, but the reverse does not hold, as is exemplified by the sole A-accent in (18). Kasper notes that constituents other than subjects can also bear contrastive stress, such as the direct object *that exam* in (19a):

(19) a. Peter would have passed *that exam*.
b. As for that exam (as opposed to another exam which he didn't pass), Peter would have passed it.

Frequently, B-accented nonsubjects are realized as syntactic topics, as in (20):

(20) *That exam*, Peter would have passed.

[9] But see Féry 1992 for arguments that intermediate phrases in German do not have a phrase accent.

Incidentally, German appears to be somewhat more tolerant in the extent that it allows constituents in positions other than syntactic topic to be construed as contrastive topics.[10] Thus, in (24) a contrastive topic is fairly happy to occur in the *Mittelfeld.*[11] [12]

(21) Peter hätte *dieses Examen* bestanden.
Peter had-SUBJ this exam passed.
'This exam, Peter would have passed.'

The reason why intonational/information-structural properties are important for the understanding of subjunctives is that an adequate account should in some way be able to elucidate why certain figurations are tied so closely with constraints on interpretation. That is, if in the absence of a B accent, the range of antecedents that can be accomodated is somewhat limited, cf. (18) above, what is it that the B accent adds so as to allow the contrastive interpretation?

4 Von Fintel 1994

One recent attempt to tie information-structural considerations into the characterization of the meaning of such sentences is made in von Fintel 1994. Drawing on Rooth's 1992 anaphoric theory of focus, von Fintel assumes that a sentence such as (17a) contains a number of elements, adjoined to the syntactic tree at particular places, which establish anaphoric links to operator domains within the same sentence or prior discourse. In particular, he adopts Rooth's "~" operator, by which an inaudible "focus anaphor" is attached to a syntactic constituent containing a focus. As a result, the domain for the focus is then established by virtue of the fact that this focus anaphor has to find an antecedent (within the same sentence or in prior discourse), that is, determine a domain with particular properties determined by the meaning of the focused element.[13] Von Fintel also proposes another operator, "≈", which attaches to a topic constituent and whose role it is to establish an anaphoric link to other possible predications over the topic (more precisely, a set of propositions in which something else is predicated over the topic). As the logical form for sentences of the type in (17a), von Fintel then proposes the following (p. 62):

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[10] As long as the topic precedes the constituent bearing the matching A accent, cf.

(i) ??Peter bestünde *dieses Examen.*
A B
Peter würde *dieses Examen* bestehen.
B A

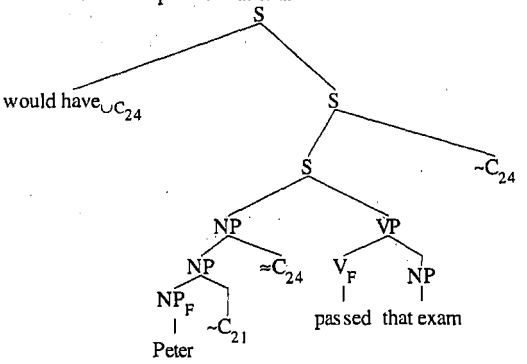
[11] This is the commonly used name for the syntactic material between the clause-initial position of finite verbs or complementizers and and the clause-final verb cluster in German clauses.

[12] Cf. Engdahl and Vallduví 1994:50 for similar observations regarding the flexibility in the implemention of informational structuring in Dutch.

[13] Cf. Fintel:38, where φ is a syntactic constituent, Γ a focus anaphor; and $[\![\ ]\!]^o$ denotes the "ordinary" semantic value of an expression and $[\![\ ]\!]^f$ its "focus semantic" value, that is the set of all possible alternatives to the focussed constituent.

(i) a. $[\![\varphi \sim \Gamma]\!]^o = [\![\varphi]\!]^o$ (no effect on assertion)
b. $[\![\varphi \sim \Gamma]\!]^f = \{[\![\varphi]\!]^o\}$ (closing off focus)
c. Presuppositions: 1. $[\![\Gamma]\!]^o \subseteq [\![\varphi]\!]^f$
2. $[\![\varphi]\!]^o \in [\![\Gamma]\!]^o$
3. $\exists \xi\ \xi \in [\![\Gamma]\!] \& \xi \neq [\![\varphi]\!]$

(22) Peter would have passed that exam



Here, the subscript $\cup C_{24}$ on the quantificational operator, *would have*, states the restrictor part of the tripartite structure, whose modal force is given as *would have* and whose nuclear scope is the entire sentence without the modal. As the modal operator's first argument, $\cup C_{24}$ denotes the set union of all the propositions picked out by the anaphor C_{24}, yielding the *resource domain* for the operator in terms of a set of situations. C_{24} in turn is constrained by the presuppositions associated with its status as a topic anaphor correlated with the subject, *Peter*, and focus anaphor associated with the focused main verb *passed*. More specifically, the denotation of C_{24} will be a subset of the set of propositions of the form 'Peter φs that exam.' According to Rooth's Alternative Semantics, this follows from the fact that the sentence contains a focused verb, *passed*, which contributes a variable meaning to the focus-semantic interpretation of the constituent that C_{24} syntactically adjoins to. As a result of the variable, the focus-semantic value will not be a single proposition, but instead the set of propositions obtained by instantiating the variable with (alternative) values. The ordinary semantic value of C_{24} in turn is given as a subset of that set, as not all possible instantiations are admitted by the context. Accordingly, the set of situations that serves as the first argument of the modal operator, *would have*, will comprise a subset of those in which Peter φs that exam, where von Fintel takes φ to range over *pass/not pass*. Moreover, note that *Peter* also bears a focus, which via the focus anaphor C_{21} evokes a set of contextually salient alternatives to Peter. Von Fintel suggests that we can plausibly assume this to be a set of people. However, C_{21} does not bear any focus-semantic import beyond the subject because once it combines with the NP, the focus-semantic value of the the resulting constituent will be closed off and prevented from percolating higher in the tree. Moreover, C_{21} does not occur elsewhere in the clause, say as the restrictor of an operator. On the other hand, C_{24} is also present in the subject NP as a topic anaphor (indicated by "≃").[14] This establishes an anaphoric link to a set of propositions in which something is predicated of the topic-marked constituent.

Thus, a paraphrase of von Fintel's logical form would be something like: "Given that we are talking about people, all hypothetical situations in which Peter passes or doesn't pass that exam are such that they can be extended to situations in which Peter passes that exam." Von Fintel assumes that the hypothetical part comes about via the presupposition

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[14] Cf. the interpretation of the topic marking, given in Fintel:53:

(i) a. $[[\ \varphi \simeq \Gamma\ ]]^o = [[\ \varphi\ ]]^o$ (no effect on assertion)

b. $[[\ \varphi \simeq \Gamma\ ]]^f = [[\ \varphi\ ]]^f$ (no affect on focus)

c. Presuppositions: $[[\ \Gamma\ ]]^o \subseteq \{p: \exists\pi.p = [[\ \varphi\ ]]^o(\pi)\}$

with π of the lowest type such that $[[\ \varphi\ ]]^o(\pi)$ or $\pi([[\ \varphi\ ]]^o)$ is of type t.

associated with *would* that the situations considered, i.e. those in the resource domain, have to be counterfactual. Since the domain of quantification consists of counterfactual passing as well as not-passing situations, the net effect is that in the actual world, Peter must neither have passed nor failed to pass the exam, which, according to von Fintel, requires that Peter did not even take the exam, i.e. that some of the preconditions for taking an exam are not given.

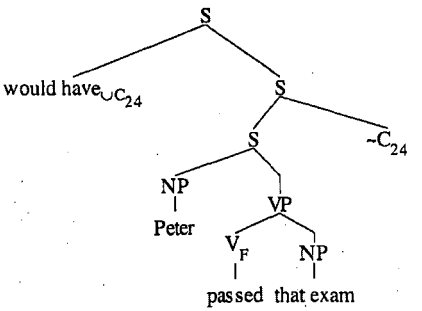
While von Fintel's account is superior over Kasper's regarding virtually all of the shortcomings found earlier with the latter work, there are a number of deficiencies with this theory as well. The first is noticed by von Fintel himself (p. 54), as he points out that there is no guarantee that the set of propositions that a topic is required to be anaphoric to actually requires that the topic be a "constituent" of those propositions. Since there are in effect no requirements on the kinds of properties that are predicated of the topic in the discourse topic, there is nothing that rules out taking properties that map the topic into any arbitrary proposition.

Further, note that while von Fintel's approach is an attempt to get away from rather "algorithmic", syntactic theories of how domains are retrieved from linguistic form (cf. e.g. Diesing 1990) towards a more pragmatically-based one, it is not entirely clear what in his system ensures that focus anaphors such as his C_{24} in (22) are actually taken to identify the domain of the operator *would have*. Thus, there is no mechanism, syntactic or pragmatic, which would prevent this anaphor, and hence the informational structuring of the sentence, from being ignored by the operator.[15]

Another shortcoming is somewhat more subtle and pertains to the role of the contrastive topic in von Fintel's logical form in (22) for simple subjunctive sentences. It appears that the occurrence of C_{24} as a topic anaphor has no bearing in determining the resource domain for the modal operator, *would have*. To see this, recall that the role of a topic anaphor is to link the sentence to a discourse topic containing a set of predications over the topic. Thus, in (22), the value of C_{24}'s occurrence as a topic anaphor is a subset of those propositions in which Peter does something. On the other hand, the occurrence of C_{24} as a focus anaphor, adjoined to S, presupposes a salient set of propositions of the form 'Peter φs that exam,' which is a stronger condition than, and hence supersedes, the presuppositional effect originating with the topic anaphor. If this is so, however, then the set of propositions that contribute the resource domain for the modal operator will be entirely determined by the focused verb, *passed*, and the focus anaphor C_{24}. Note also, that the lowest focus anaphor, C_{21} only requires there to be a set of salient persons, but this set and the properties of these people have no bearing on the determination of the value for C_{24}. What this means, though, is that the meaning of the sentence will, in its relevant aspects (i.e. the determination of the operator domain), come out to be precisely the same if the sentence does not contain a contrastive topic marking on the subject as in our example in (17) above. Its representation within von Fintel's framework is given in (23):

[15] Similarly, there seems to be nothing that forces the topic anaphor and the higher focus anaphor to be identified as the same, C_{24}. If they were indeed different, there is no guarantee that their respective antecedent sets bear any relation to each other.

(23)



This presents two problems for von Fintel's account. First, it makes the empirically wrong prediction that the particular kinds of interpretation found with simple subjunctives should also be possible if the sentence contains no prosodically marked contrastive topic. And second, even if it were possible to get this kind of interpretation without such a topic, it remains a mystery what this kind of informational structuring adds to the interpretation of simple subjunctives of the type being considered here.

5 Information Structure and Domain Restriction

There is one very important respect in which von Fintel's account is qualitatively different from the approach pursued by Kasper. This is the idea that for an expression containing an operator, the domain of that operator cannot be determined by confining one's consideration to that expression. Rather, a full account is only possible if one takes the pragmatic properties of the elements involved into account. Specifically, there is an intimate relationship between domain restriction and discourse. In von Fintel's theory this relationship is established by assimilating the behavior of focus/topic to that of anaphors. A rather different perspective suggests itself in the theory of pragmatics developed in Roberts 1995, which I summarize briefly below.

One important metaphor in Roberts' theory is that of language as a *game*, which is a line of thought that goes back to Wittgenstein and has been brought to special prominence by Carlson 1983. This means that linguistic behavior, in particular the constituents of a discourse, can best be understood as the interaction of cooperative players trying to attain certain goals, chief among them to arrive at a mutually agreed upon set of beliefs about the world, i.e. to maintain a *common ground* in the sense of Stalnaker 1979. Borrowing from Carlson 1983, Roberts takes the exchanges of the game to consist of moves governed by conversational and conventional constraints (or rules). Such moves consist of set-up moves such as questions and payoff moves such as assertions that serve as answers to previously introduced (and mutually accepted) questions. In order to attain a particular goal (i.e. to obtain a certain piece of information), a discourse participant pursues a *strategy of inquiry* which is implemented by a set of increasingly specific set-up moves. Such strategies, or, more accurately, the (temporal) sequence of set-up moves carrying out the strategy, together with the corresponding payoff moves constitute what Roberts calls the *information structure* of a discourse.

Of central importance in this connection is the notion of *question under discussion* (QUD). A question under discussion—also referred to as the *topic under discussion* or the *discourse topic*—is essentially the most recent set-up move that the conversation participants have accepted and hence are committed to finding at least a partial answer

for. The semantic import of a question is to provide a set of alternatives; thus to (partially) answer a question is to exclude certain possibilities from consideration. Alternatively, instead of providing a direct answer via an assertion, an interlocutor may choose to introduce a more specific subquestion, i.e. set up a strategy of questions. Only if a move accomplishes one of these two possibilities is it deemed *relevant* to the question under discussion. Both options share the property of narrowing down the set of possibilities considered for what is taken to hold in the world. But while answers are choices among alternatives—ideally reflecting some discourse participant's state of knowledge of the world—a subquestion only brings into view the particular aspects of reality that the current conversation is meant to elucidate with the understanding that more specific choices among the set of current alternatives may still be made. Ultimately, one can regard every question as a subquestion to what Roberts calls the "Big Question", i.e. *What is the way that things are?*

Crucially, some of the constraints on interpretation of an utterance can only be understood properly if the utterance is viewed in the context of the information structure of the preceding context, specifically, the current question under discussion. Any utterance must be relevant with respect to the latter in the sense mentioned before. However, it is not required that the discourse topic has to have been introduced by an overt question; i.e., often the question under discussion is only implicit in the discourse and hence discourse participants have to accomodate a plausible topic in light of a recent utterance. Consequently, a given utterance may not be associated with a unique question under discussion.[16]

At this point, it is useful to give a simple example, along the lines of Roberts 1995, which also serves to illustrate a more formal characterization of the relevant notions. Consider the discourse in (24):

(24) a. Who ate what?
b. What did [Fred] eat?
c. [Fred] ate [the beans].

In (24c), we have an utterance with two foci, the one on the subject being marked with a B accent while the object exhibits an A accent. These two foci give rise to what Roberts 1995:18, following Rooth 1985, calls the *focus alternative set*:

(25) The **focus alternative set** corresponding to a constituent β, $\|\beta\|$, is the set of all interpretations obtained by replacing all the F-marked (focused) constituents in β with variables, and then interpreting the result relative to each memeber of the set of all assignment functions which vary at most in the values they assign to those variables.

Accordingly, the focus alternative set of (24c) is as given in (26):

(26) $\|(24c)\| = \{ p : \exists u,v \in D [p = u \text{ ate } v] \}$

That is, it is the set of propositions such that someone eats something in p.

Now, we need to make explicit how the assertion in (24c) is part of the information structure of the whole discourse. To this end, we need to take a closer look at the aspect of the meaning of questions that is of immediate pragmatic relevance. Questions such as (24a) give rise to a set of propositions that constitute *Q-alternatives*. The definition of this notion is given in (27) from Roberts 1995:13:

[16] See also Roberts and Kadmon 1986 on this point.

(27) The Q-alternatives corresponding to a clause α:
$Q\text{-alt}(\alpha) = \{p: (\exists u^{i-1},..., u^{i-n} \in D)[p = |\beta|(u^{i-1})...(u^{i-n})]\}$,
where: α has the logical form $wh_{i-1}, ..., wh_{i-n}(\beta)$,
with $\{wh_{i-1}, ..., wh_{i-n}\}$ the (possibly empty) set of *wh*-elements in α, and
D is the domain of the model for the language, suitably sortally restricted.

Here, $|\beta|$ denotes the truthconditional meaning of an expression β, i.e. a set of possible worlds, or, following Kratzer 1989, a set of situations. Basically, the Q-alternatives of a question provide all the possible propositions—cf. Hamblin 1973—from which an an answer, be it complete or partial, must be picked. Thus, we couldn't answer the question in (24a) with an utterance like *It is raining outside*. In fact, the Q-alternatives of a question α *are* the denotation of that question, as stated in (28):

(28) $|?\alpha| = Q\text{-alt}(\alpha)$

The notions of focus alternatives and Q-alternatives are also important for ensuring cohesion among questions and answers in discourse. In particular, they are crucial for defining what it is for an utterance to be **congruent** to a question:

(29) Move β is *congruent* to a question $?\alpha$ iff its focal alternatives $\|\beta\|$ are the Q-alternatives determined by $?\alpha$, i.e. iff $\|\beta\| = Q\text{-alt}(\alpha)$.

In particular, we need to make sure that an utterance is congruent not to any arbitrary question, but, more specifically, to a question under discussion which the discourse is meant to address:

(30) Presupposition of prosodic focus in an utterance $*\beta$ (assertion, question, imperative)
β is congruent to a question under discussion (in the information structure).

Thus, the Q-alternative set of (24a) is as given in (31):

(31) $Q\text{-alt}((24a)) = \{ p : \exists u,v \in D\ [p = |atel(u,v)|] \}$

This set is precisely the same as the one in (26), hence (24c) is congruent to the question in (24a).

Furthermore, I follow Roberts in assuming that in (24), (24c) is not simply an answer to (24a). Rather, the prosodic asymmetry between the B-accented subject and the A-accented object seems to indicate that in answering (24a), a certain strategy of inquiry is involved that employs the subquestion in (24b). Logically, the question under discussion entails the subquestion because the set of all complete answers to the first includes the set of all complete answers to the second (see Roberts 1995 for discussion). The set of all complete answers to the question under discussion sets up a partition on the context set. To illustrate, let us assume that we have a model with two people, Fred and Bill, and two edible substances, beans and rice. Then one complete answer to the question in (24a) would be as follows:

(32) a. Fred ate the beans.
b. Fred did not eat the rice.
c. Bill did not eat the beans.
d. Bill ate the rice.

Any other possible combination constitutes a different complete answer. Only one combination may hold in a given world. Conversely, we can take the worlds in which one complete answer holds to constitute and equivalence class which does not intersect with the set of worlds in which any other combination of values for the eating relation holds. In this sense, the Q-alternatives of the question under discussion establish a partition on the context set. However, answers are rarely complete; thus, a rather than a full accounting of how the world is with respect to a certain question under discussion, we often have to be content with partial answers. An answer is partial if it excludes at least one equivalence class from the set of all complete answers. Thus, (32a) is a partial answer because it removes from the context set all those worlds in which Fred did not eat the beans. But this for instance still leaves Fred's status with respect to the rice unresolved. Note also that any complete answer is also partial, but not vice versa.

How does the foregoing help to shed some light on the problem at hand, i.e. the interpretation of simple subjunctives? A sentence such as the one in (17a), I claim, can only be dealt with adequately if we consider it as an answer to the question under discussion. In particular, because of the distribution of accents, we also have to assume that there is a particular strategy of inquiry that this sentence is to address.

(33) a. Who bears what relation to the exam?
b. What relation does Peter bear to the exam?
c. [Peter] [would have passed] the exam.

One important assumption is that the accent on *passed* is taken to indicate broad focus in the sense that the modal is part of the constituent replaced by variables in the determination of the focus alternative set. Consequently, this set will contain propositions in which Peter bears a "real" relation to the exam (eg., he takes it and passes/flunks) as well as those in which what I will refer to as "modal relations" hold. This means that in a given world *w*, it may not even make sense to wonder about Peters passing/failing of said exam because the presuppositions are not met in such a world (for instance, if he never took the exam in that world). But that still leaves open the possibility that Peter bears a modal relation to the exam, for instance, that he *might* have passed it. In other words, if we consider the worlds that are modally accessible from *w*, it may not be excluded that Peter passes the exam in such worlds. A relevant answer to the question in (33a,b) will then be one that excludes at least one cell in the partition set up by the Q-alternatives to (33a). As a consequence of allowing modal relations, it follows that there can never be a complete answer, in Roberts' sense, as there is an infinitude of possible modal relations which no answer can exhaustively specify. At first this seems to raise a problem. Since *any* modal relation contributes a partial answer, and hence ensures congruence in Roberts' sense, why could the *would*-counterfactual not be interpreted with any implicit antecedent? That is, if the requirement of congruence does not supply a constraint on what hypothetical worlds/situations are under discussion, why don't speakers accomodate antecedents at random. For instance, in (33c), if the accomodated antecedent were *if the Moon were made of green cheese*, the resulting conditional should count as a legitimate congruent answer as it supplies a modal relation. In other words, any simple subjunctive with an unexpressed antecedent will vacuously supply an answer.[17]

The solution to this problem, I want to argue, cannot be found by considering only the relationship between the elements of the strategy of inquiry in (33). Rather, it is necessary to realize that the initial question under discussion is a subquestion which in turn serves to address a superordinate discourse topic. For the case at hand, this more general

[17] If this is correct, it suggests that the situation with modals is rather different from that of *only*. As is discussed by Roberts, the proper domain restriction for focus-sensitive elements such as *only* does not have to be stipulated, but can be deduced fairly directly by considering which choices will yield answers that are relevant for answering the question under discussion.

question involves a comparison between the brothers in terms of their scholastic abilities. To make matters concrete, we may take this comparison to be verbalized by means of a question such as in (34).

(34) Are you as good as your brother?

This in turn means that answers to the question, *what relation does Peter bear to the exam?* will indeed be subject to the requirement that they be of relevance, not only for the immediate question under discussion, but also for the initially raised question. Hence, only if we accomodate an antecedent for the simple subjunctive which addresses the issue of comparison will the resulting conditional yield a relevant answer. An antecedent in which one brother hypothetically takes the place of the other is the most straightforward way to arrive at the required comparison. By contrast, if instead an antecedent such as *if the Moon were made of green cheese* were chosen, no **relevant** partial answer would emerge.

This view fits straightforwardly into a theory of counterfactuals such as Kratzer 1981. There, it is assumed that counterfactuals involve an empty modal base f and a totally realistic ordering source, g. If p is the antecedent of a counterfactual then this means that the modal base is determined directly as the set of worlds in which p is true. Given p, having a totally realistic ordering source entails that "all possible worlds in which the antecedent p is true are ordered with respect to their being more or less near to what is actually the case in the world under consideration" (Kratzer 1981:69). Taken by themselves, these conditions do not say much if p is implicit—that is, they will not be sufficient to restrict the range of possible antecedents p. But this is where superordinate considerations of relevance come into play. The sentence can only make a relevant contribution to the question under discussion—that is the issue of comparison between different protagonists—if the accomodated antecedent allows us to make a statement about the person in question, viz. Peter. This in turn minimally requires that the accomodated antecedent provide the presuppositions of the consequent. The totally realistic ordering source ensures that those worlds in the set are ranked higher which conform in more ways to what the actual world looks like.

The conversational background plays an important role in determining whether the accomodation of the implicit antecedent is local or global. The scenario that was introduced in the beginning of this paper is only one of a number of possibilities in which a sentence like (17a) could be uttered. In each case, though, we can safely assume that what is accomodated in the hypothesized antecedent will at the very least supply the presuppositions for the consequent. Thus, if it is part of the background information that John flunked the exam while Peter never took it, then the sentence in (17a) will require accomodation of situations in which the presuppositions of passing are satisfied, i.e. in which Peter takes the exam. In this case, then, the accomodated situations of Peter taking the exam all involve strictly local accomodation. That is to say, hearers cannot globally accomodate this proposition as it would lead to a conflict with what is known about the real world. But this doesn't always have to be so. According to the Principle of Optimal Realism proposed by Roberts 1994:18, accomodation may indeed be global—in fact, this is the default case:

(35) **Principle of optimal realism**:
[...] we make the default assumption that counterfactual contexts are as much like the actual world as is compatible with what's explicitly said about them.

This principle entails that accomodated presuppositions are taken to hold at the highest level compatible with what's known about the actual world. Hence, if they are in conflict with the actual world, accomodation is only local. Otherwise, it will be global. Among other things, this predicts that a sentence like (17a) should in principle allow readings in

which global accomodation takes place. Suppose, for instance, that the sentence in (17a) is uttered against the backdrop of what may have been the case if the thunderstorm that hit Columbus and threw everything into disarray for a few days and kept students from studying had not occurred. In this case, the QUD would be something along the following lines:

(36) Who bears what relation to the exam under the premise of there not being a thunderstorm?
a. John (still) would have flunked the exam.
b. Peter would have passed the exam.

In other words, in a context of the appropriate kind, a sentence like (35b) can very well be interpreted as part of a larger strategy of inquiry which itself is hypothetical in nature. But when there is nothing known about the real world that is incompatible with Peter's taking said exam, this information can be accomodated and moreover, this accomodation is global.

How does the kind of contrast effect perceived with the B-A intonation fit into this picture? What I want to suggest is that this not "hard-wired" into the conventional meaning of this type of prosody, but instead a pragmatic effect. In particular, it can be seen as a result of a conversational implicature. Note that lack of prosodic prominence or deaccenting conveys such material is assumed to be part of what is already salient in discourse or what can generally be taken to be already known to the conversation participants. On the other hand, lack of deaccenting, i.e. prosodic prominence has the effect of highlighting something what counts as novel in comparison with what is in the common ground. Seen in that light, the A accent in examples such as (36b) marks the current statement as different in one respect or another from whatever else is explicitly or implicitly part of the strategy of inquiry being pursued. In the specific case of (36b), this gives rise to the implicature that Peter's fate is judged as novel in comparison with that of some other person who has either been made salient in previous discourse or whose existence and concomitant relation to the exam is accomodated. If, on the other hand, the utterance conveyed nothing novel in light of the kind of relation borne to the exam in question made salient in previous discourse, an A accent would be infelicitous as there is a more informative way of conveying the information. Specifically, this is the function of *too*, which links a given statement to information already part of the common ground.

(37) [Peter] would have passed the exam, too.

Note, incidentally, that with narrow focus on the modal, we can directly induce a comparison among different types of modal relations:

(38) [Peter] [would] have passed the exam.

A scenario that will make uttering such an example felicitous is one in which (given some hypothetical circumstance, for instance of having had more sleep the night before) it has already been determined that, say, John *might* have passed the exam, but the possibility of failure, even under these more advantageous circumstances, cannot be ruled out. In Peter's case, on the other hand, the possibility of failure is not deemed an option.

6 Conclusion

There is obviously much more that could be said about the accomodation of antecedents for simple subjunctives. The basic picture that has been emerging from the work of von Fintel is clear, namely that explicit interpretation rules for simple subjunctives such as the ones proposed by Kasper are neither necessary nor sufficient. Instead, it seems that the

range of accomodated antecedents is largely predictable by the kinds of constraints that govern accomodation in general, that is the pragmatic component. While von Fintel's approach attempts to assimilate accomodation to anaphoric reference—in particular to presupposed discourse topics, Roberts' perspective allows us to view the phenomenon from a more general and encompassing vantage point. For contributions to a conversation to be felicitous, they need to be able to further the interlocutors' knowledge of the way that things are in a nonrandom fashion. Clearly, simple subjunctives are no exception and the suggestions made here indicate that they can be shown to fit the patterns of coherence and informativeness if we allow for a more abstract notion of topic under discussion.

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